NWS Form E-5 U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION NATIONAL WEATHER SERVICE **MONTHLY REPORT OF HYDROLOGIC CONDITIONS**	**HYDROLOGIC SERVICE AREA:** Pocatello, Idaho (PIH) **REPORT FOR:** **MONTH:** November **YEAR:** 2016
TO: Hydrologic Operations Division, W/OH2 National Weather Service National Oceanic and Atmospheric Administration Silver Spring, Maryland 20910	**SIGNATURE** Travis Wyatt Service Hydrologist / Acting **DATE:** December 13, 2016
When no flooding occurs, include miscellaneous river conditions, such as significant rises, record low stages, ice conditions, snow cover, droughts and hydrologic products issued (NWS Instruction 10-924).	

X **An X in this box indicates that *no* flooding has occurred for the month within this hydrologic service area.**

Overview:

November was not a good month for precipitation. There were no records for precipitation in November. Most of the area was 50% of normal for precipitation. Monthly total rainfall was 1.40 inches in Grace and 1.20 inches in Ashton. It was very warm across the area for the month of November with most of the area running 3 to 10 degrees above normal. Multiple daily maximum temperature records were broken. Mean average temperatures ranged from 33 to 44 degrees F across the HSA.

As far as the short-term 8 to 14 day Climate Prediction Center Outlook is concerned, the eastern Idaho forecast for mostly 40 percent below normal temperatures and 33 to 40 percent chance of above normal precipitation. The one-month forecast graphics are below. For the three-month outlook, the temperature forecast is warmer than normal; with a 33 to 40 percent chance of above normal temperatures over eastern Idaho. As for three-month outlook for precipitation, the outlook continues to be good news with a 33 to 40 percent chance of above normal precipitation pattern across all of eastern Idaho.

Of the data available for the month, the station within the HSA reaching the highest 24-hour temperature was the Massacre Rocks State Park COOP station reaching 72°F on the 16th. The station (non-SNOTEL and non-RAWS) with the lowest recorded temperature was the Stanley COOP station at 2°F on November 30th. The highest recorded 24-hr precipitation (non-SNOTEL) occurred at the Lava Hot Springs COOP station where 0.54 inches fell on the 28th. The highest recorded precipitation total (non-SNOTEL) occurred at Grace where 1.40 total inches was recorded for the month. The Franklin Basin SNOTEL recorded 3.50 inches of total precipitation for the month. The basins receiving the greatest precipitation were the Malad River and Portneuf River basins receiving 92% and 78% of average precipitation respectively for the month of November-based on SNOTEL data.

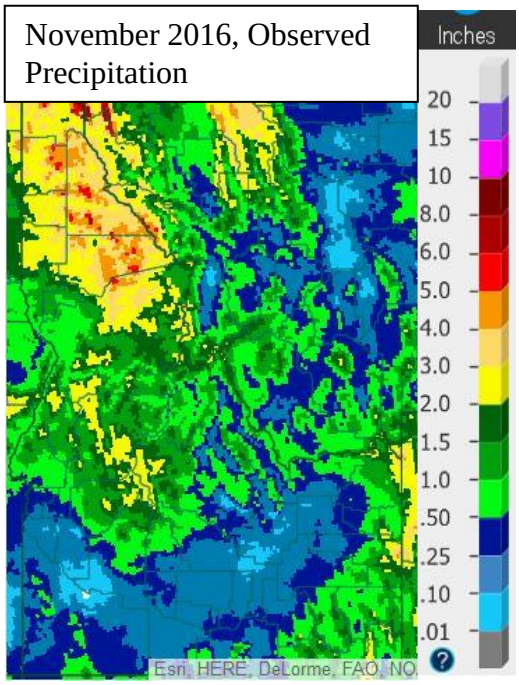
Reservoirs last month increased capacity overall by around 9% in the upper Snake River basin system and is currently sitting at 42% of capacity overall. Compared to last year at this time, it was about 43% of capacity. According to the Natural Resources Conservation Service and U.S. Bureau of Reclamation reservoir data, the most notable increase in storage capacity were the Mackay reservoir as well as the Little Wood and American Falls reservoirs increasing percent capacity by 31% as well as 16% and 16% respectively. Only Lake Walcott decreased capacity by 6% for the month. Little Wood is currently has the highest percent of average at 157 and Palisades reservoir is at the lowest: 54% of average.

Current streamflow conditions in eastern Idaho are mostly near normal for monthly streamflows for the majority of the unregulated streams (see USGS streamflow graphic below).

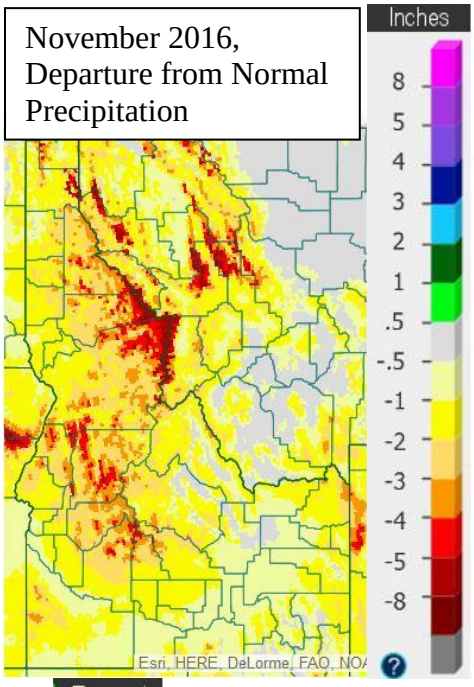
Despite very low precipitation for November, Drought conditions across eastern Idaho have remained steady in November as reflected on the latest U.S. Drought Monitor. Currently, about 17 percent of the state is in Abnormally Dry drought status with about 1% of the state in Moderate Drought. The latest update of the U.S. Seasonal Drought Outlook has kept the improved outlook from last month for the eastern Idaho's drought outlook forecast.

Precipitation:

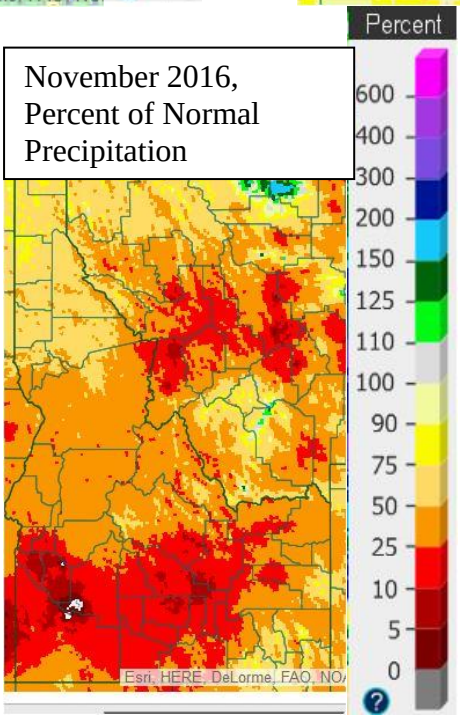
November 2016, Observed Precipitation



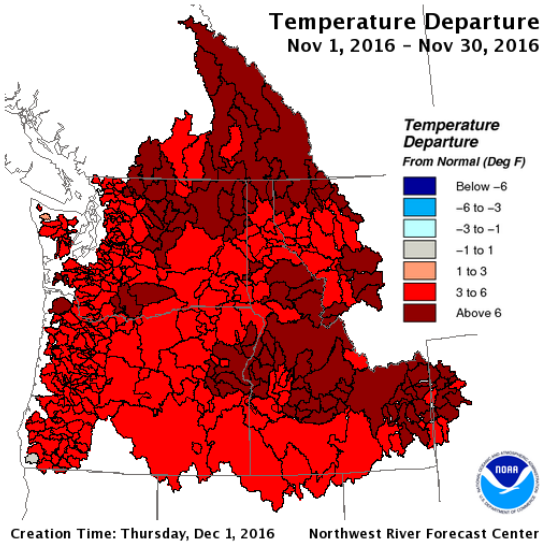
November 2016, Departure from Normal Precipitation



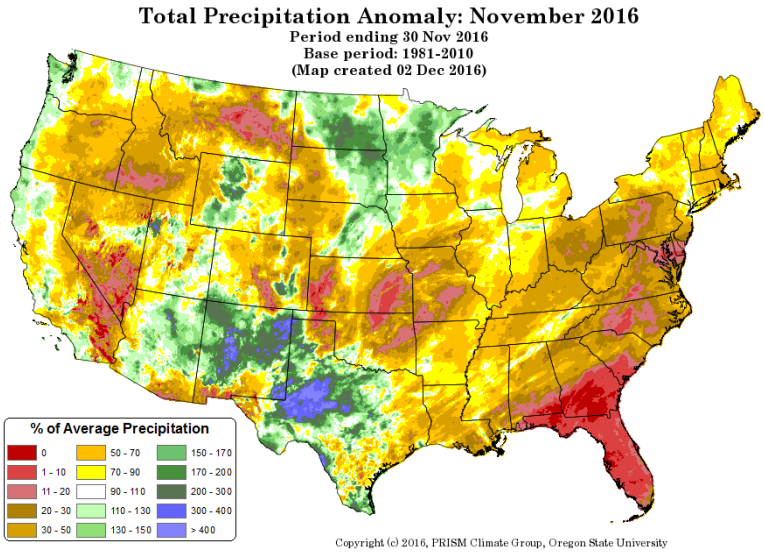
November 2016, Percent of Normal Precipitation



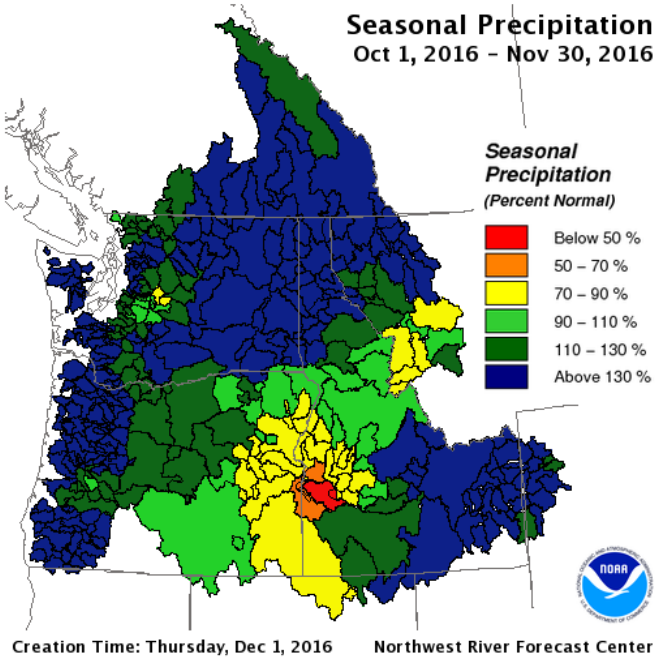
www.water.weather.gov/precip/#



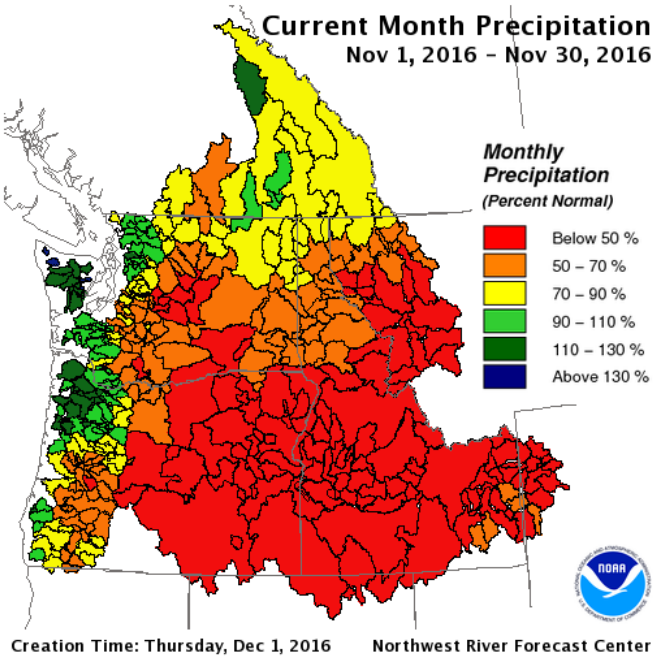
www.nwrfc.noaa.gov/WAT_RES_wy_summary/20161201/CurMonMAT_2016Nov30_2016120116.png



www. prism.oregonstate.edu/



www. nwrfc.noaa.gov/WAT_RES_wy_summary/20161201/SeasonalMAP_2016Nov30_2016120116.png



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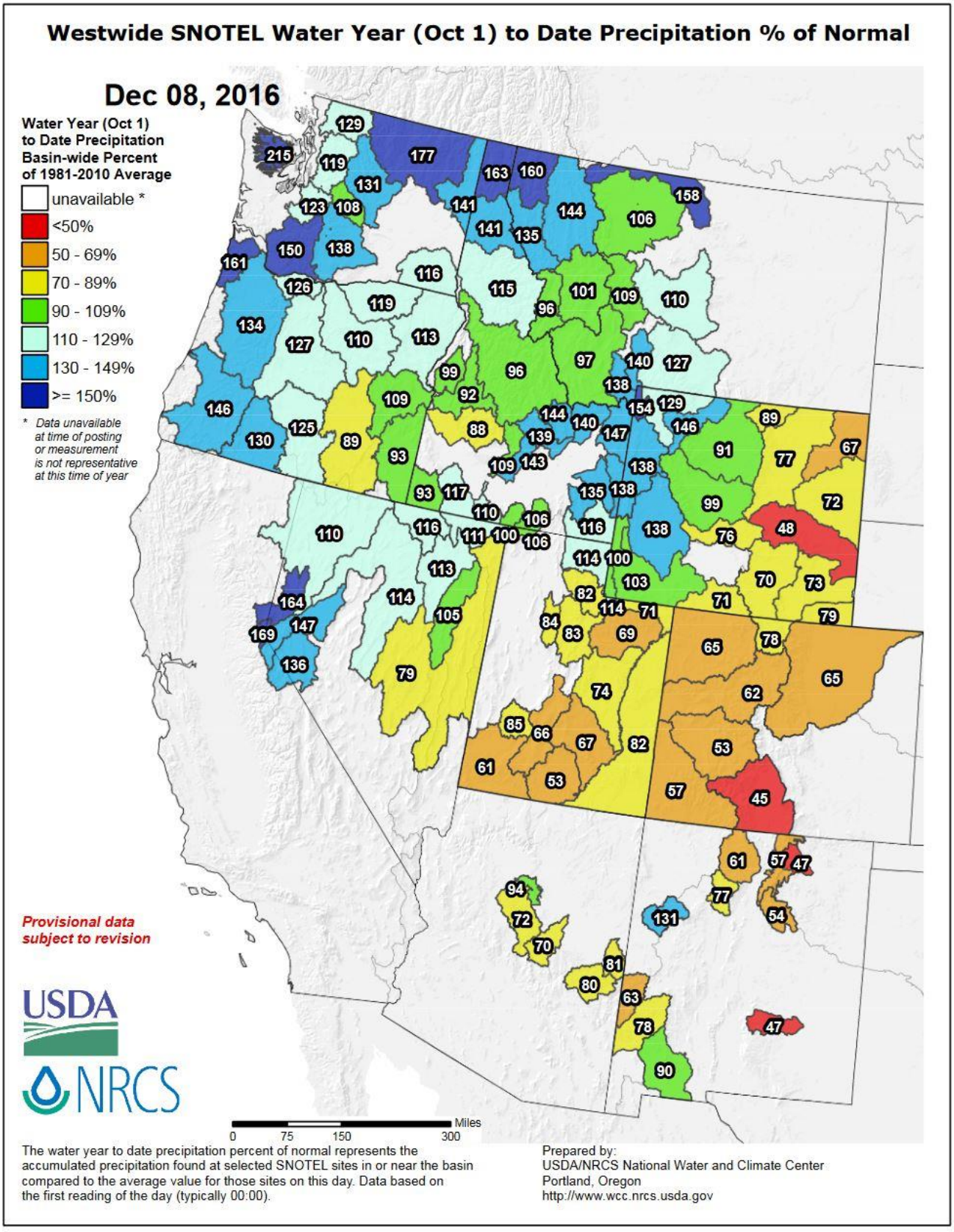
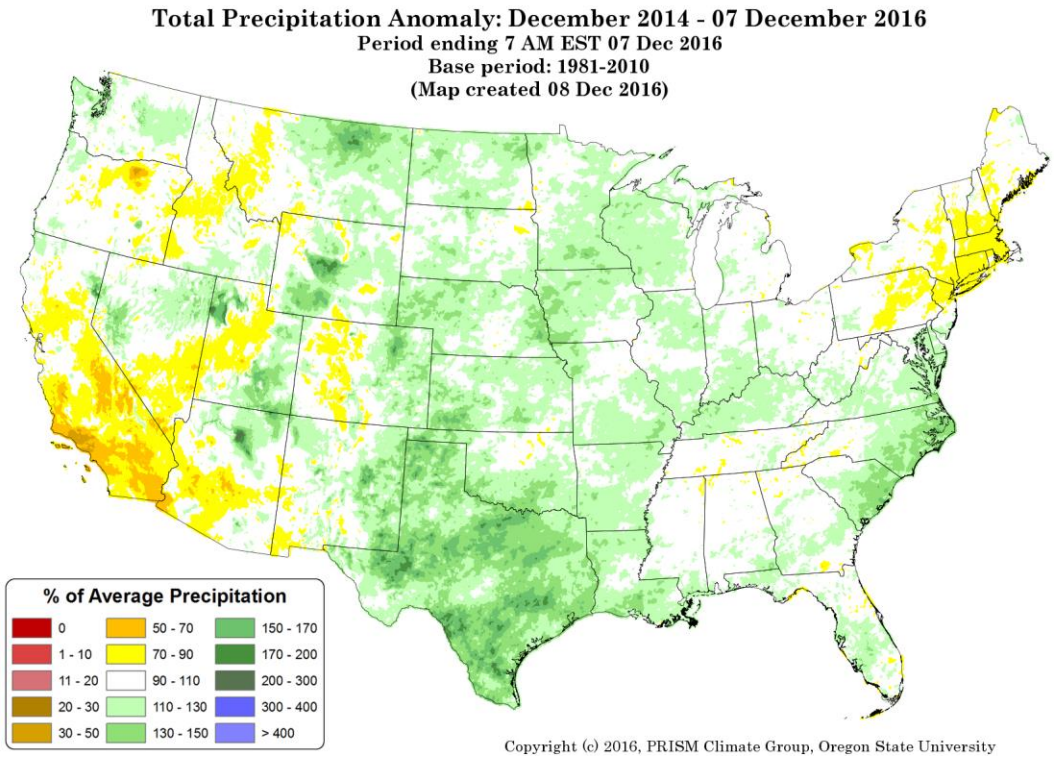
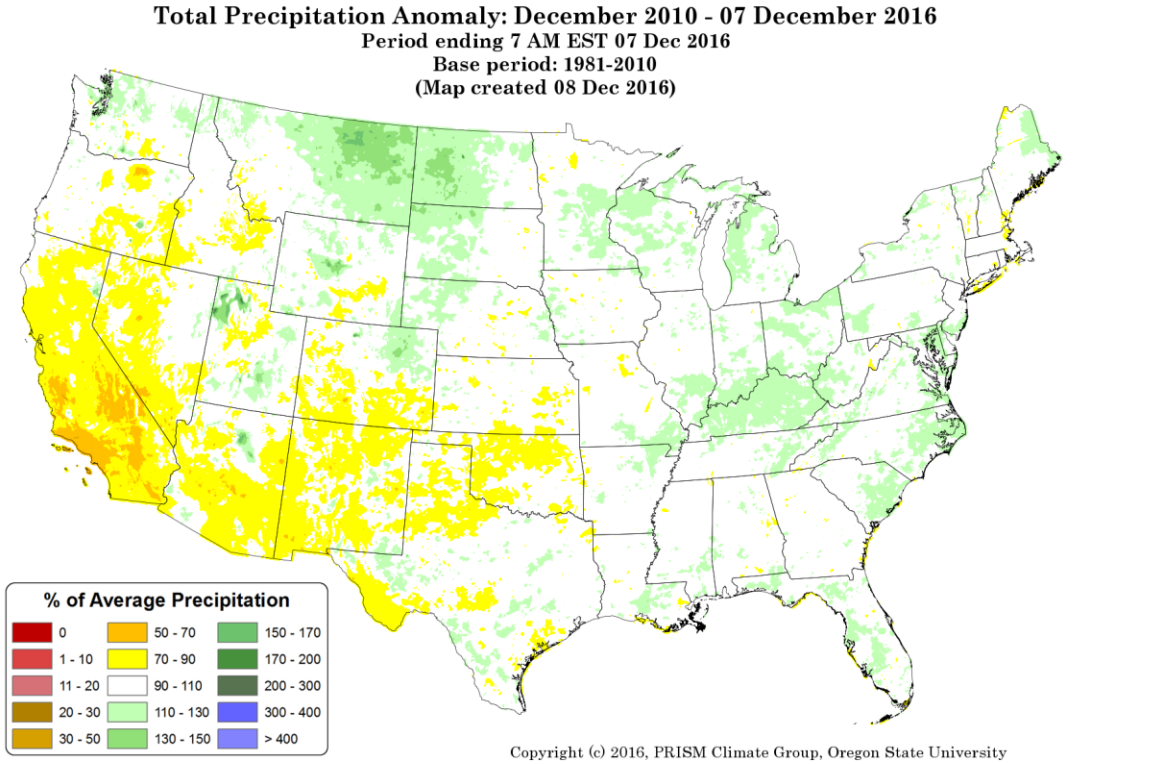


www. wcc.nrcs.usda.gov/ftpref/data/water/wcs/gis/maps/west_wytdprecpctnormal_update.pdf

Past 2 Years of Precipitation % of Average:



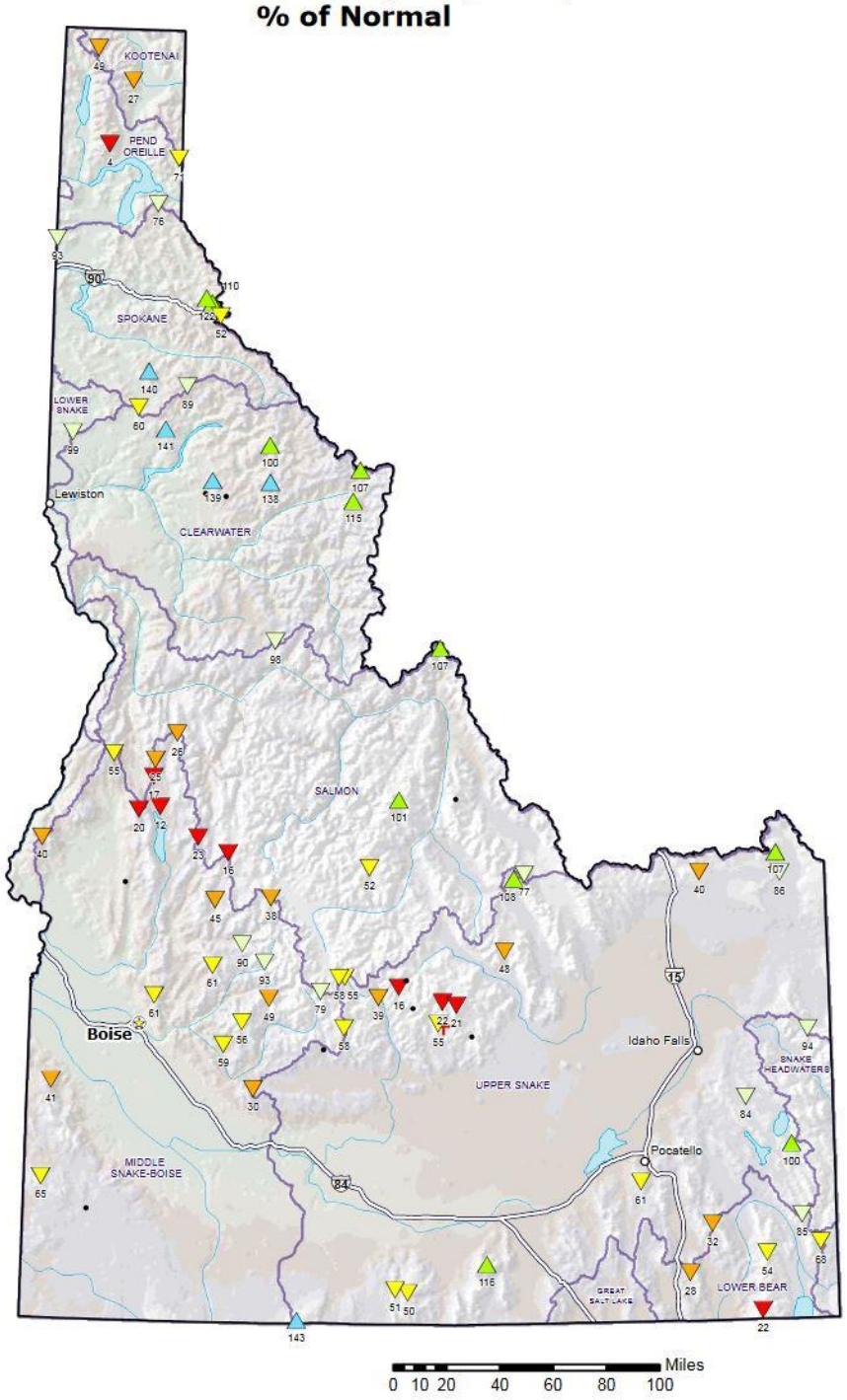
Past 6 Years of Precipitation % of Average:



www.prism.oregonstate.edu/comparisons/drought.php

Idaho
SNOTEL Month to Date (MTD) Precipitation
% of Normal

Dec 08, 2016



Current MTD Precipitation % of 1981-2010 Average

- ▲ > 200%
- ▲ 150-200%
- ▲ 125-149%
- ▲ 100-124%
- ▽ 75-99%
- ▽ 50-74%
- ▼ 25-49%
- ▼ 1-24%
- \+ 0%
- • Unavailable*

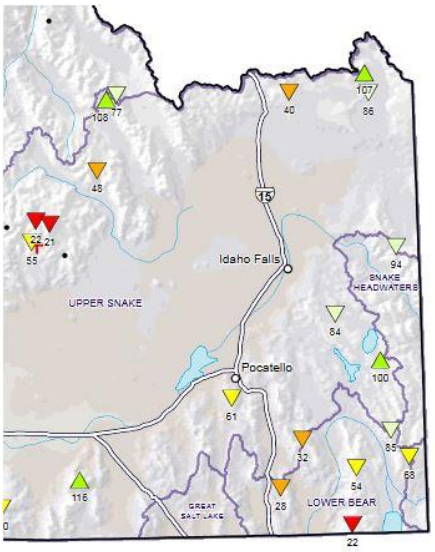
Provisional Data Subject to Revision

USDA NRCS

Prepared by:
USDA/NRCS National Water and Climate Center
Portland, Oregon
http://www.wcc.nrcs.usda.gov

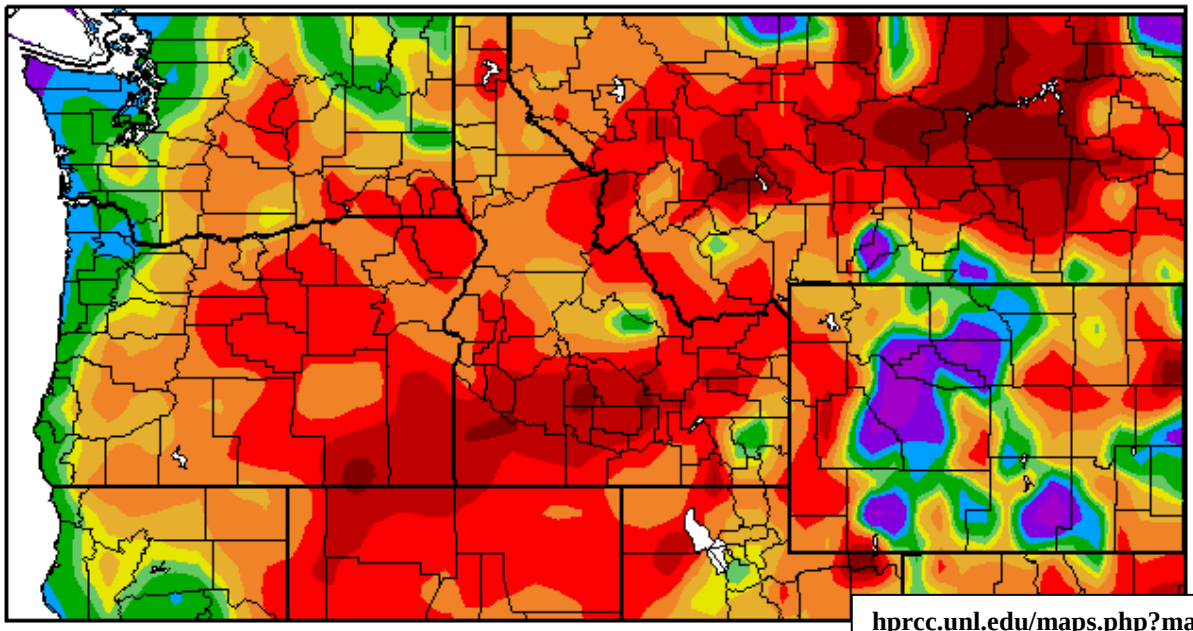
** Data unavailable at time of posting or unavailable long-term normal.*

www. wcc.nrcs.usda.gov/ftpref/data/water/wcs/gis/maps/id_mtdprecpctnormal.pdf

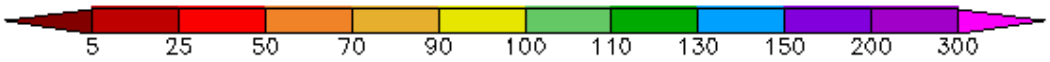


SNOTEL MTD % of Normal Precipitation for end of November 2016
(image is cropped from above image)

Percent of Normal Precipitation (%)
11/1/2016 – 11/30/2016



hprcc.unl.edu/maps.php?map=ACISClimateMaps

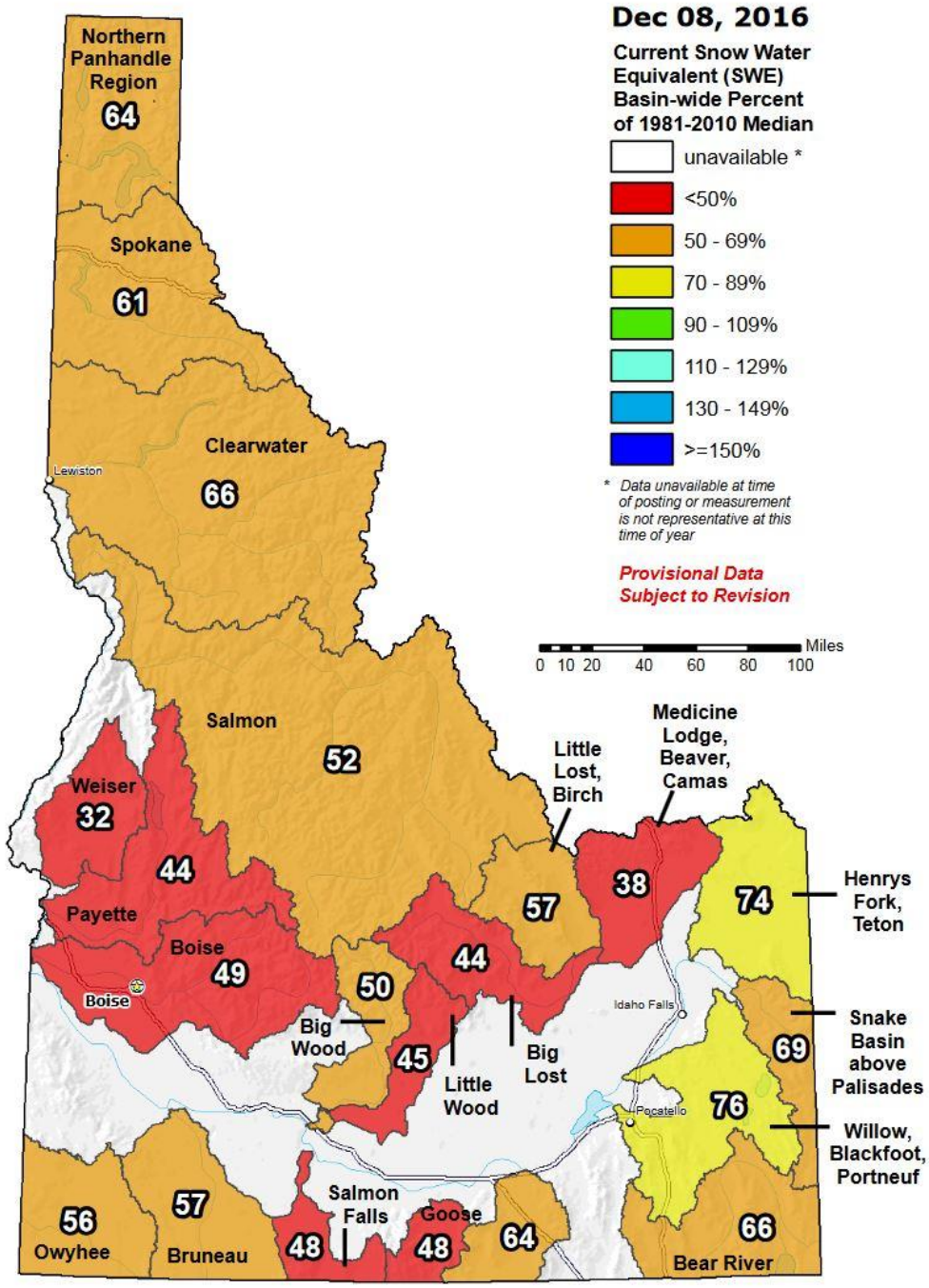


Generated 12/5/2016 at HPRCC using provisional data.

Regional Climate Centers

November was the opposite of October. Very little precipitation fell over the majority of the area in November, just 25 to 50 percent of normal. Only the very Western Pacific and Central Wyoming received near to normal to slightly above normal precipitation.

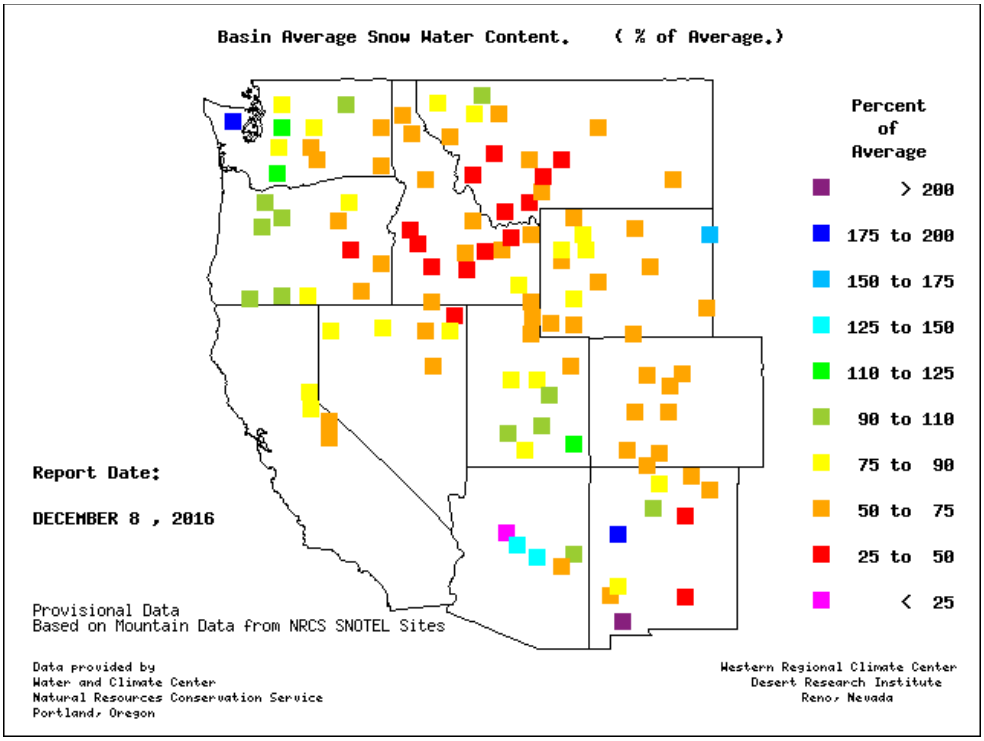
Idaho SNOTEL Current Snow Water Equivalent (SWE) % of Normal



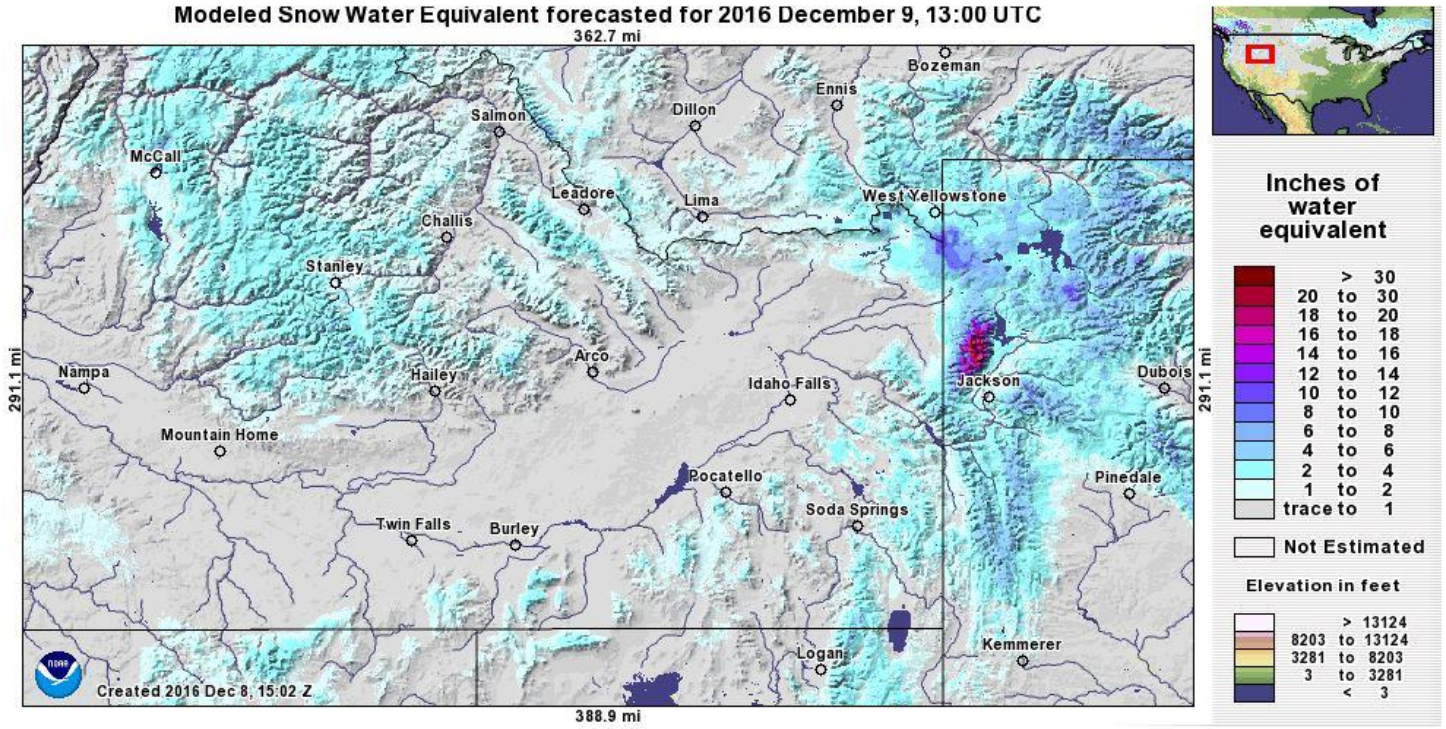
The snow water equivalent percent of normal represents the current snow water equivalent found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).

Prepared by:
USDA/NRCS National Water and Climate Center
Portland, Oregon
http://www.wcc.nrcs.usda.gov

www.wcc.nrcs.usda.gov/ftpref/data/water/wcs/gis/maps/id_swepctnormal_update.pdf



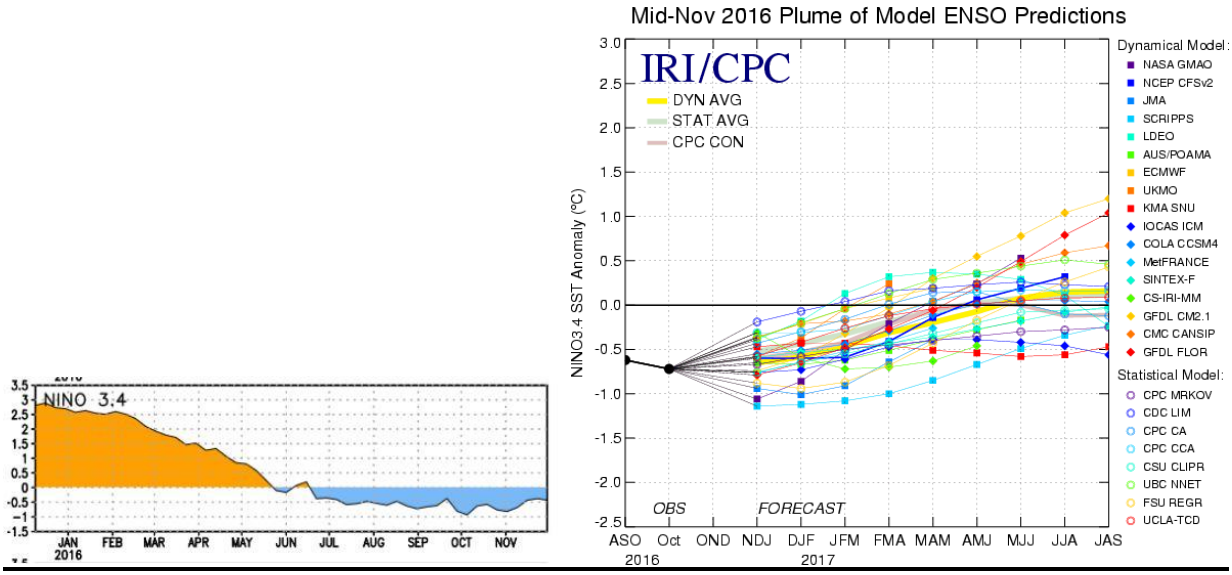
www.wrcc.dri.edu/snotelanom/basinswe.html



www.nohrsc.noaa.gov/interactive/html/map.html

ENSO Update:

Latest Observed SST Departure: Niño 3.4 ~ -0.4 Deg C



www.cpc.ncep.noaa.gov, **iri.columbia.edu/climate/ENSO** ***and***

CPC Synopsis: La Nina conditions are present. La Niña conditions are slightly favored to persist (~55% chance) during winter.

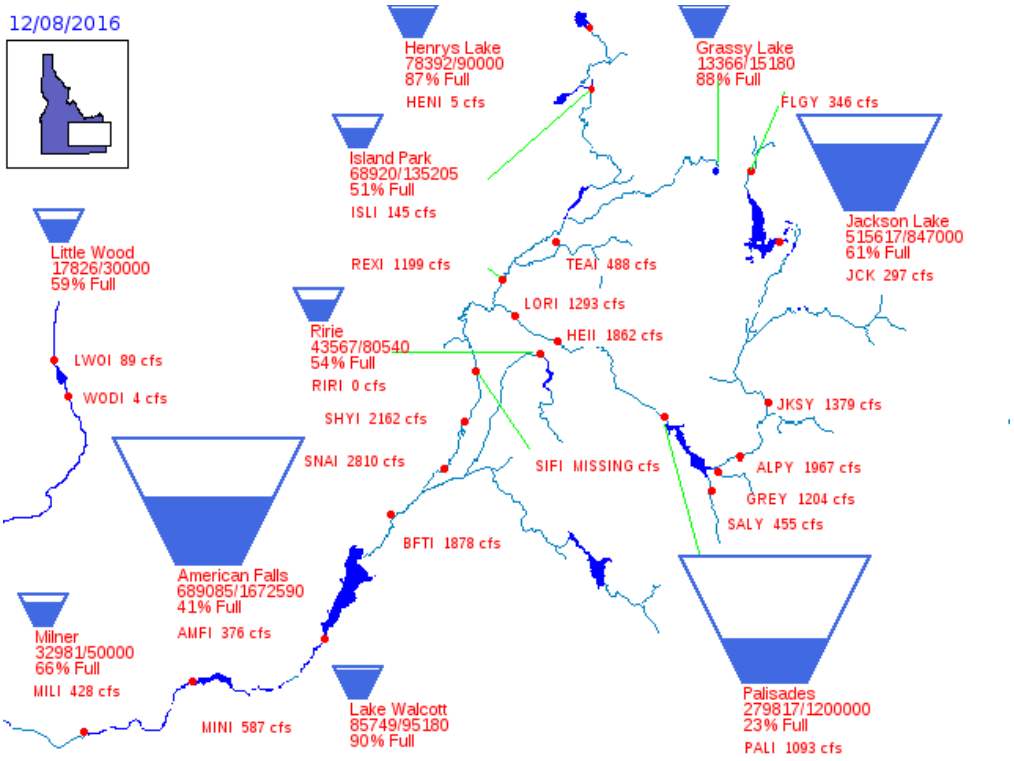
Note: Equatorial sea surface temperature (SST's) are below average in the central and east central equatorial Pacific Ocean. MJO signal continues to be weak. The Pacific Decadal Oscillation (PDO) is currently positive.

Reservoirs:

Reservoir	% Capacity October 31[1]	% Capacity November 30[2]	Percent Change	% of Average[2]	% of Average Last Year[2]
Jackson Lake	57	60	3	122	131
Palisades	23	33	10	54	73
Henrys Lake	84	86	2	100	93
Island Park	36	49	13	78	83
Grassy Lake	84	87	3	116	109
Ririe	50	54	4	127	124
Blackfoot	58	60	2	122	96
American Falls	21	37	16	82	63
Mackay	33	64	31	172	105
Little Wood	41	57	16	157	59
Magic	34	41	7	129	43
Oakley	15	18	3	75	55
Bear Lake	34	34	0	76	77
Lake Walcott	96[3]	90[4]	-6	n/a	n/a
Milner	64[3]	66[4]	2	n/a	n/a

Source: (1) NRCS October 31, 2016; (2) NRCS November 30, 2016.
(3) US Bureau of Reclamation (BOR) November 6, 2016 (4) BOR December 8, 2016

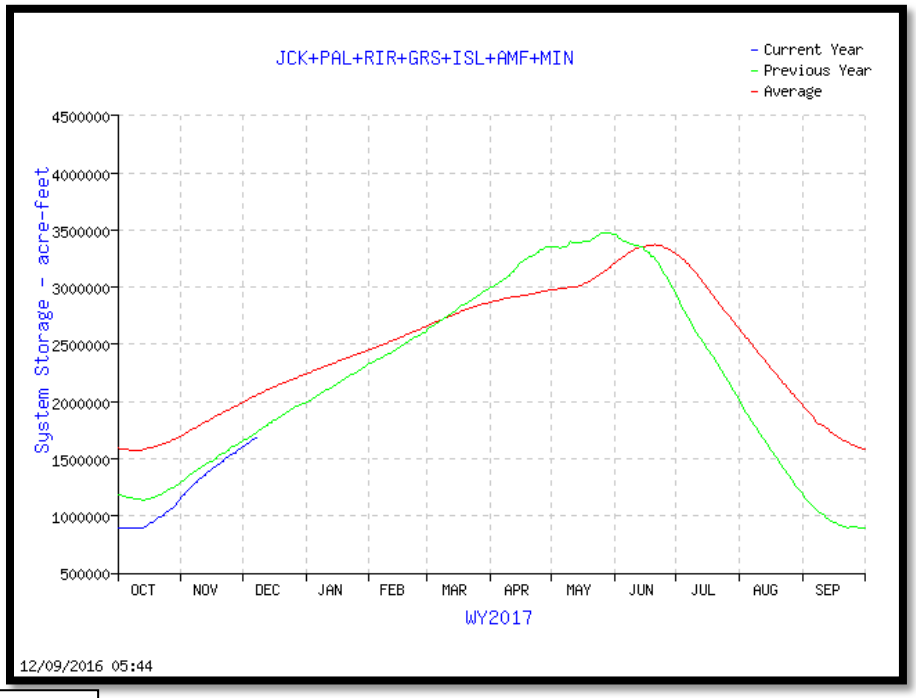
wcc.nrcs.usda.gov/ftpref/support/water/SummaryReports/ID/BRes_12_2016.pdf



42% of Capacity in Upper Snake River System
(Jackson Lake, Palisades, Grassy Lake, Island Park, Ririe, American Falls & Lake Walcott)

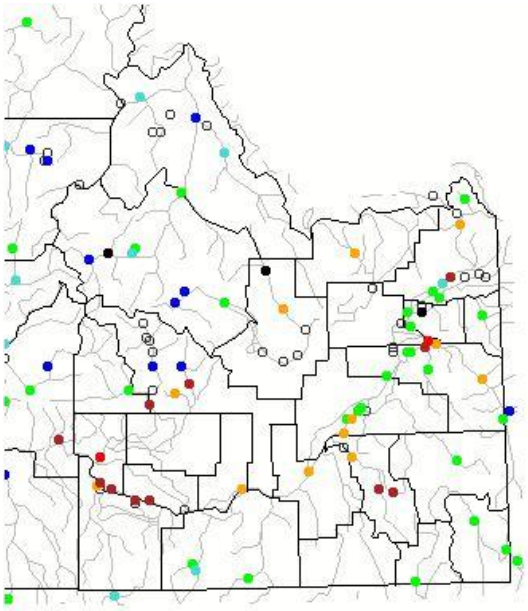
www.usbr.gov/pn/hydromet/burtea.html

Graph of Upper Snake River Current Total System Reservoir Storage



www.usbr.gov/pn-bin/graphwy2.pl?snasys_af

Streamflow:



Monthly average streamflow compared to historical average streamflow for October 2016.

USGS

www.waterwatch.usgs.gov/?m=mv01d&r=id&w=map

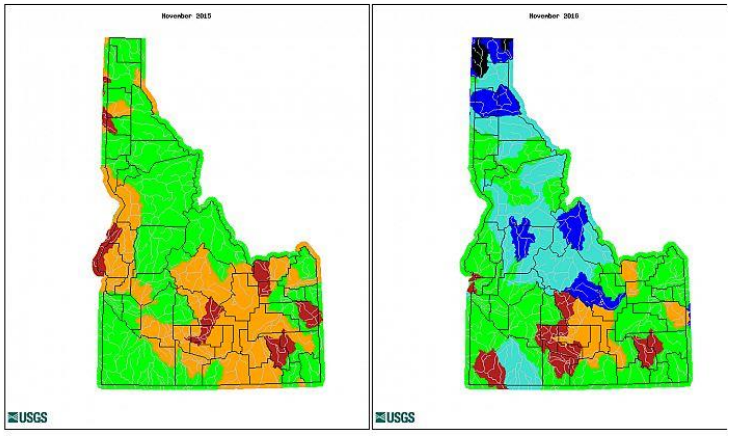
Explanation - Percentile classes							
Low	<10 Much below normal	10-24 Below normal	25-75 Normal	76-90 Above normal	>90 Much above normal	High	Not-ranked

Comparison of Streamflow Maps

Geographic area: Idaho | Water resource region: | GO

Map type: Monthly Streamflow (month of year) | Sub type: HUC Streamflow Map

Date (YYYYMM): 201511 Date (YYYYMM): 201611

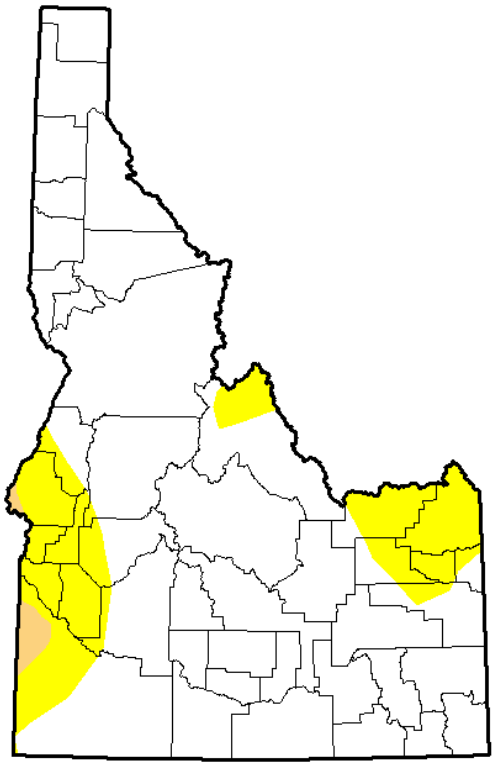


Explanation - Percentile classes							
Low	<10 Much below normal	10-24 Below normal	25-75 Normal	76-90 Above normal	>90 Much above normal	High	No Data

www.waterwatch.usgs.gov/index.php

Drought:

U.S. Drought Monitor
Idaho



December 6, 2016
(Released Thursday, Dec. 8, 2016)
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	82.66	17.34	1.04	0.00	0.00	0.00
Last Week 11/29/2016	82.66	17.34	1.04	0.00	0.00	0.00
3 Months Ago 9/6/2016	10.77	89.23	10.23	0.02	0.00	0.00
Start of Calendar Year 12/29/2015	10.98	89.02	64.05	24.35	1.18	0.00
Start of Water Year 9/27/2016	6.14	93.86	8.89	0.00	0.00	0.00
One Year Ago 12/8/2015	8.63	91.37	66.76	42.06	7.68	0.00

Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
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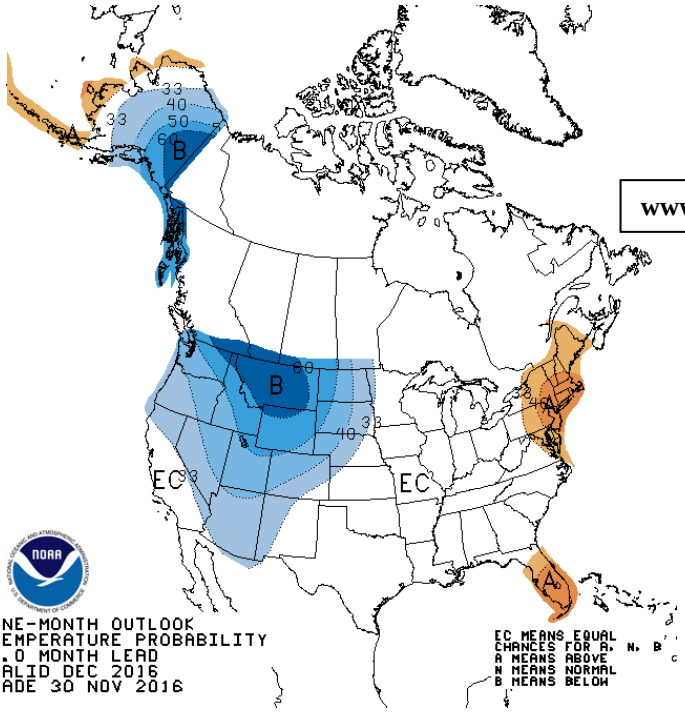
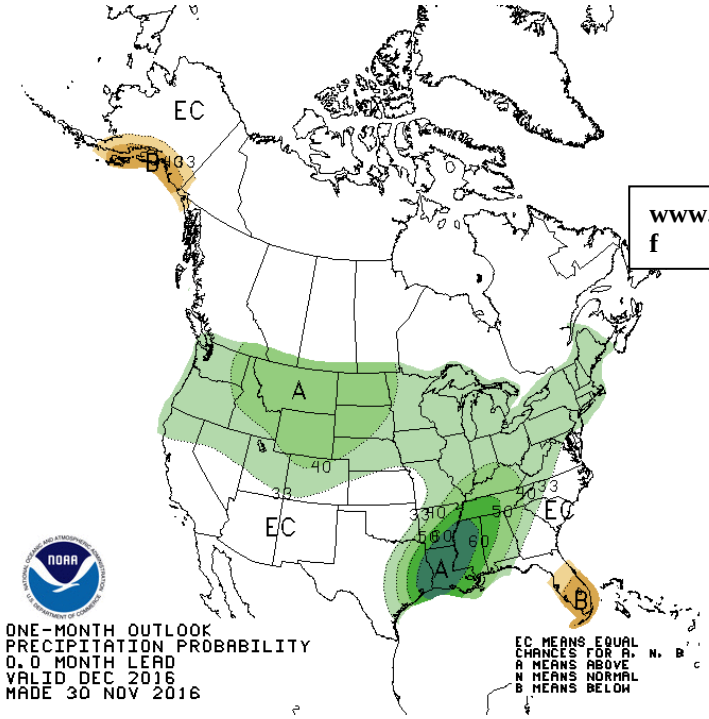
NOAA/NWS/NCEP/CPC

http://droughtmonitor.unl.edu/



www.cpc.ncep.noaa.gov/products/predictions/30day/off15_temp.gif



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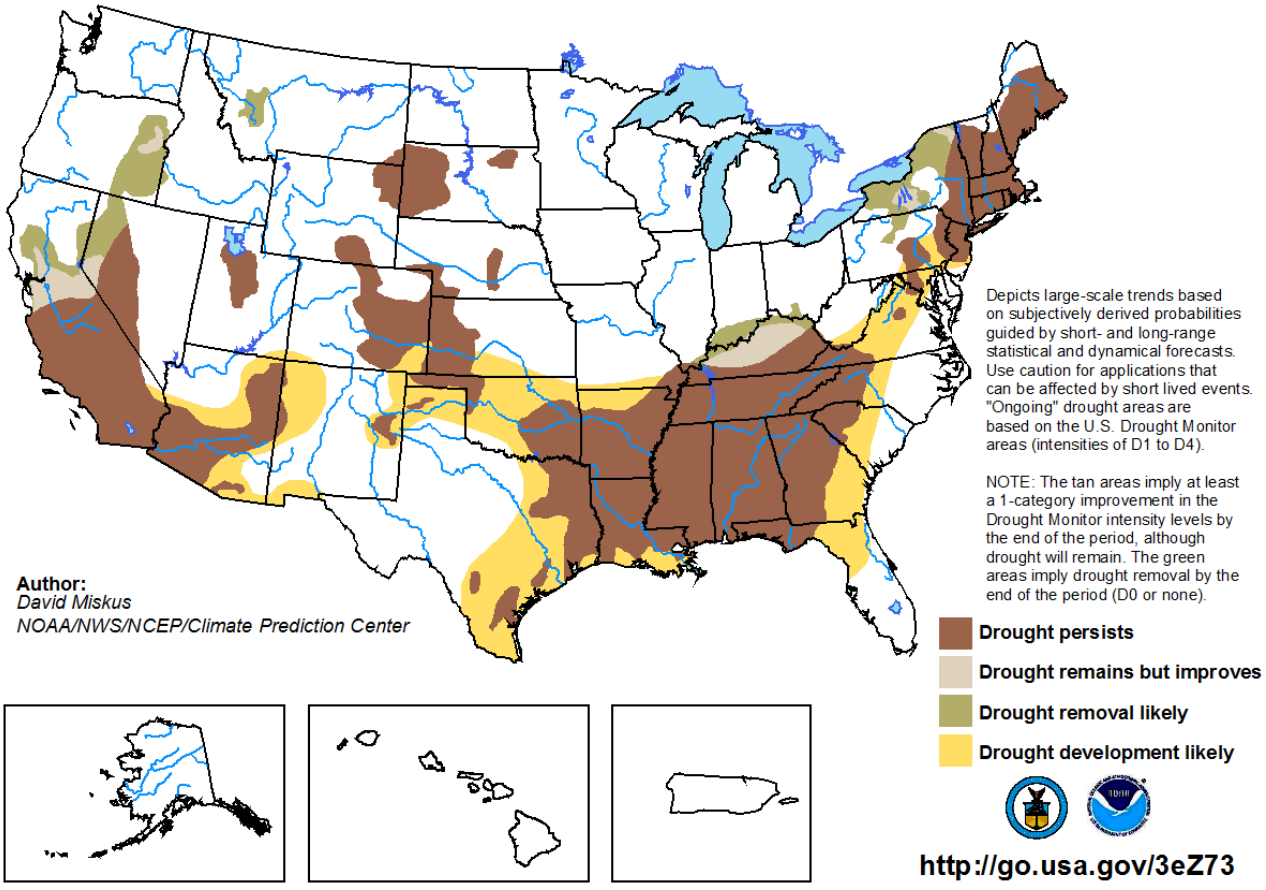

www.cpc.ncep.noaa.gov/products/expert_assessment/season_drought.png

cc:

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PIH Mets/HMT (pih.ops)

End

cbl